

**California Partnership for the San Joaquin Valley
Water Quality, Supply and Reliability Work Group
Strategic Action Proposal
September 2006**

I. Mission Statement

The mission of the Water Quality, Supply and Reliability Work Group is to ensure a reliable, adequate quality water supply to sustain a high quality of life, and a world-class agricultural sector, while protecting and enhancing the environment.

II. Background

A. Scope Adopted by Partnership

Note: The Water Quality, Supply and Reliability Work Group originally contained an Energy sub-group. The Energy sub-group has since become its own Work Group, but the scope adopted by the Partnership Board reflects the original, larger grouping.

- Survey all relevant state, federal and local agencies, entities and individuals regarding existing needs, water projects and institutional barriers. Utilize the information in DWR Bulletin 160 and coordinate all activities with the San Joaquin Valley Regional Water Plan being developed.
- Organize survey information into a database to catalogue water-related needs: (a) water supply; (b) water quality; (c) flood control; and (d) environmental enhancement.
- Delineate legal and institutional barriers to meeting regional water-related needs.
- Develop a Water Master Plan and Business Plan, including a focus on flood control.
- Develop a strategic plan for energy supply, alternative renewable resources, and efficiencies, beginning with the California Energy Commission Integrated Energy Policy Report.

B. Overall Vision for Water in the San Joaquin Valley

The vision for the water component of the Water Quality, Supply and Reliability Work Group is to ensure adequate water supplies needed in the San Joaquin Valley to sustain the Valley's lifestyle, support regional economic growth, retain a world-class agricultural economy, maintain a reliable, high-quality urban water supply and protect and enhance our local environment.

The mission of the Work Group is to support, in a collaborative manner, Valley congressional leadership to create a comprehensive, integrated plan for water resources in the San Joaquin Valley in conjunction with the California Partnership for the San Joaquin Valley.

C. Partnership with Congressional Effort to Create the San Joaquin Valley Regional Water Plan

Congressmen George Radanovich, Dennis Cardoza, Devin Nunes and Jim Costa initiated the development of the San Joaquin Valley Regional Water Plan prior to the launch of the California Partnership for the San Joaquin Valley. The California Water Institute at California State University, Fresno was asked to facilitate the regional planning effort. With the comprehensive nature of the congressional regional plan, the Partnership agreed to synchronize efforts with the ongoing process to develop the action plan and recommendations for the governor.

This was achieved by the Partnership convening a Water Quality, Supply and Reliability Work Group to focus on water and energy issues in the San Joaquin Valley.

D. Issues Focused on by the San Joaquin Valley Regional Water Plan

Development of the San Joaquin Valley Regional Water Plan has been organized into four sub-working groups. The four sub-working groups are organized by four water-related needs within the region: (1) Water Supply, (2) Water Quality, (3) Flood Control, and (4) Environmental Enhancement. Members of the water community, representatives of industries and communities relying on water, and organizations dedicated to the enhancement of the environment populate the working groups. The working groups also include irrigation district managers, water agency members, water resource engineers, government officials, agribusiness representatives, public works managers, and environmentalists.

Approximately 20% of all electrical energy consumed in the state is used to pump, transport or treat water; the members of these working groups are acutely aware of the synergistic, interdependent relationship between water and energy. Regional Plan leadership did not address energy directly; however, energy is a major topic for the Partnership. Energy recommendations are a companion document to water recommendations.

III. Goals and Objectives

A. Narrative

Goals are reported as means of convenience in this document, with no attempt to assign priority. However, it is believed that the process begins and ends with the development of a comprehensive regional water plan.

1. Goal 1: Develop and implement integrated San Joaquin Valley Regional Water Plans.

a. Metrics – Within a two-year period:

- Complete an ongoing, integrated San Joaquin Valley Regional Water Plan.

b. Objectives

- **Objective A: Develop San Joaquin Valley Regional Water Plan (management, technical and administrative support for plan development).**

An integrated regional water management plan will play a critical role in meeting California's water needs. The eight county San Joaquin Valley, consisting of the San Joaquin River and Tulare Lake Hydrologic Regions, has been undergoing a regional water plan development process which began in March 2005. The plan process was conceived under the leadership of Congressmen Radanovich, Nunes, Cardoza and Costa and includes 38 Valley water and community leaders organized into four sub-working groups: 1) Water Supply, 2) Water Quality, 3) Flood Control, and 4) Environmental Enhancement. The first phase of the plan is underway with completion set for March 2007.

Note: Development of the San Joaquin Valley Regional Water Plan is as yet unfunded by either state or federal sources.

2. Goal 2: Incorporate major levee enhancements in Sacramento-San Joaquin Delta and San Joaquin Valley to safeguard regional water quality and quantity and provide for flood control.

The Sacramento-San Joaquin Delta is the single most important link in California's water supply system. The State Water Project (SWP) and the federal Central Valley Project (CVP) convey water through the Delta to more than 22 million Californians and 7 million acres of highly productive farmland. Improvements to the existing conveyance system are needed to increase flexibility of water delivery, enhance water supply and water quality, reinforce levee stability and protect the environment. These improvements are urgently needed.

The Delta faces threats to its long-term viability as a water supply source and as an ecosystem. Risks posed by levee instability, subsidence, and major flood events, rising sea levels and earthquakes make the Delta increasingly vulnerable as a long-term conveyance system and could imperil the water supply for the San Joaquin Valley and the state. The summer 2004 breach of the Jones Tract levee and subsequent in excess of \$100 million emergency repair cost paid by DWR and other local agencies is an example of the extreme cost of unexpected repairs to levees in the Delta.

Agencies, citizens and elected officials and others throughout the San Joaquin Valley have a vital interest in protecting and safeguarding the Delta.

The extensive river system leading into the Delta from the south consists primarily of the San Joaquin and Kings Rivers along with tributaries of the Calaveras, Tuolumne, Merced, and Madera Rivers. In addition, the Kern, Tule and Kaweah Rivers and a host of smaller rivers and streams drain the Sierras. The coastal mountain range is a source for many smaller drainages that empty into the Valley's west side. Throughout this region there is an ongoing need for flood protection and levee upgrades due to highly variable rainfall conditions. New trends and realities, including a backlog of maintenance on

levees, bypasses and channels and a recent court ruling expanding the state's liability for flood damage, are creating an urgent need to re-examine and clarify the state's role in flood control.

Flood management in the San Joaquin Valley requires an approach that will achieve both short-term and long-term solutions. (Source: Association of California Water Agencies "No Time to Waste – A Blueprint for California Water" May 2005)

a. Metrics – Within a ten-year period:

- Strengthen flood control and levee protection systems for San Joaquin watercourses.
- Significantly improve Delta levee integrity to maintain and preserve the delta System.
- Support and fund the State Delta Levee Maintenance Subvention Program
- Support the development of a Levee Break Response Action Plan

b. Objectives

- **Objective A: Significantly improve San Joaquin, Merced, Kings, Kaweah, Tule and Kern Rivers' and tributaries' and other Valley drainage systems' levee integrity to assist communities in meeting 100 year plus flood protection standards and FEMA levee certification standards.**

Flood management in the San Joaquin Valley needs an approach that will achieve both short-term and long-term solutions. The approach should include a set of strategies that involve policy changes, program reforms and funding proposals to better protect California from the devastating consequences and economic impacts of catastrophic floods. Strategies include: a) Maintain and rehabilitate aging water facilities and flood control structures. Integrate flood management with other objectives whenever possible; b) Improve the effectiveness of emergency response plans; c) Create a sustainable fund to support flood management programs; d) Update floodplain maps and provide better education on flood risks to the public and to agencies that authorize development in flood plains; and e) Implement multi-objective management approaches for floodplains that would include, but not be limited to, increased flood protection, ecosystem restoration, and farmland protection. (Source: California Department of Water Resources "Flood Warnings – Responding to California's Flood Crisis" January 2005)

- **Objective B: Significantly improve Delta levee system integrity.**

Delta levees confine flow to channels and protect Delta lands from daily flooding by tidal fluctuations. Without levees, the Delta would be a 740,000 acre brackish inland sea with any movement of freshwater, through or around, impossible. Given the importance of the Delta to California and the San Joaquin Valley, the Partnership recommends major attention and capital funding be directed towards

capital improvements for improving and maintaining Delta levee stability during the 2007-2017 period.

Delta Levee System and Island Preservation - Although there are numerous levee systems protecting separate islands or tracts of land in the Delta, there is a critical inter-relationship of such systems. For the so-called lowlands which are areas below five feet above sea level the flooding of a particular island or tract will result in seepage into adjoining lands, levees and embankments. The generation of wind waves across large open bodies of water also creates a serious threat to adjoining facilities. As demonstrated by the June 2004 flooding of Jones Tract, the seepage and wind waves from flooded areas can result in the failure of adjoining levees, railroad and highway embankments and major utilities with a real potential for a domino-type impact. Due to the resulting depth of water flooding of Delta islands or tracts will not result in shallow marsh habitat but rather will result in the creation of a large lake or bay. The areas abutting such a lake or bay and particularly those which are developed will suffer from rising groundwater tables. Abutting levees and embankments will have to be raised and fortified.

Another important consideration is not allowing islands to flood or stay flooded or levee systems to erode away is the preservation of fresh water supplies. The Delta levee systems are critical to the efficient control of salinity intrusion from the Bay into the Delta which is the hub for water deliveries throughout the state. There is also a huge increase in evaporative loss when an agricultural area is left in a flooded condition. The commonly recognized rule of thumb is that 2 acre feet per acre more of fresh water will be lost from a flooded area than from the same area subjected to farming. If for example 460,000 acres of Delta lowlands were allowed to be permanently flooded, the additional fresh water loss would be about 920,000 acre feet per year. To replace such a loss particularly in a dry year would require the entire yield from a number of very large reservoirs.

The alternative of an inland saltwater bay with the resulting salination of groundwater basins, adverse impacts to fish, waterfowl habitat and recreation and loss of Delta pool storage is not a good choice. Preservation of the Delta levee systems requires rehabilitation to the PL 84-99 Corps of Engineers Delta agricultural levee standards to reasonably reduce the risk of levee failures and a Levee Break Response Plan to immediately minimize the impacts of levee failures when they do occur.

The most effective way to accomplish rehabilitation is to provide adequate funding to the already ongoing State Delta Levee Maintenance Subvention Program which is administered by the State Reclamation Board through the California Department of Water Resources and California Department of Fish and Game. The program allocates funding for reimbursement to local agencies and to the California Department of Water Resources for special projects.

The local agency portion of the program provides that after the local district expends \$1,000.00 per mile of levee the local district is reimbursed up to 75% of the cost. Due to limited availability of funding, the State has in the past failed to provide its full cost share and the typical reimbursement has been about 50% to 60%.

Increased funding levels are essential to reach PL 84-99 Delta agricultural levee construction standards within a reasonable period of time, and agriculture-based reclamation districts will need increased state and/or federal cost sharing. An ability-to-pay component should be added to increase the state and/or federal cost-share up to 90% to enable the neediest districts to reach PL 84-99 agricultural protection standards. The program should be funded at a minimum level of \$24,000,000.00 per year with one-half allocated to the local assistance program and the other half to the Department of Water Resources special projects.

Levee Break Response Action Plan - The Delta levee rehabilitation should be viewed as an ongoing process resulting in gradual but increasing stability. Although the risk of levee failure will be reduced, it will never be eliminated. Local agencies can help in a flood fight but do not have the financial ability to repair a levee break, dewater the flooded areas or otherwise undertake major restoration work. Once a levee break occurs, the assessable base of the local agency is of little value. The opportunity for possible reimbursement through currently structured disaster assistance or similar types of programs does not provide the cash necessary to accomplish the work. Given today's costs, only a state or federal agency has the financial capability to adequately respond to a Delta levee break. A plan for immediate response by a state or federal agency once a levee break occurs is essential to containment of the damages. The plan should provide for restoration of the public facilities to the point that the local agencies can financially and effectively resume operation and maintenance. Emergency response regardless of the type of emergency should not involve a debate on policy. Immediate no holds barred response to arrest the threat should be the goal.

3. Goal 3: Augment surface and groundwater banking programs and recycled water projects in the San Joaquin Valley.

California must develop additional surface and groundwater water storage to add flexibility to existing water systems. Additional storage is required to improve water quality at critical times, to meet long-term needs of fish and ecosystems, and to accommodate potential changes in California's climate that could significantly reduce the amount of water stored in the Sierra snow pack.

The Partnership recommends that state and federal agencies complete feasibility studies now underway for several promising surface storage projects and move ahead with those determined to be practicable. Additionally, the Partnership recommends that the state partner with local and regional interests to develop local storage projects that allow surface and groundwater conjunctive use.

Local agencies throughout California have made great strides in water use recycling, water use efficiency and development of inland brackish water supplies as effective water management tools. The west side of the San Joaquin Valley currently has over 300,000

acres of farmland impacted by subsurface drainage, a considerable portion of which may yield substantial quantities of sustainable, potable water developed from brackish water treatment facilities.

Particularly, in San Joaquin County, surface water quantity and quality are often inadequate for agricultural users, limiting the types of crops that can be grown and lowering crop yields of those that are grown. In the County's southwest, urban growth has increased demands on a limited water supply. Problems are further exacerbated by reductions in groundwater availability due to overdraft and groundwater contamination and the potential onset of global warming that could result in more severe floods and droughts. Increasing California's surface water storage capability not only provides more water for agriculture, the environment, urban and recreational use, but also increases the flexibility for facility operators to better manage the impacts of floods and droughts. In addition to local threats to water supplies, the County has been adversely affected by changes in State and federal policies, which erode existing supplies and have upset longstanding plans to bring new supplies to the region. Consequently, the State must set a priority to support and fund work to develop additional surface storage facilities throughout the State to ensure California's continued growth and prosperity. Examples of such projects are the County's MORE WATER - Duck Creek Reservoir and the Eastern Water Alliance South Gulch Reservoir Projects, which will help to regulate wet-year flood waters for the Eastern San Joaquin Integrated Conjunctive Use Program.

The Partnership recommends that the state reduce regulatory and financial barriers to fully developing these valuable water resources and fully support their expansion in the future. (Source-ACWA "Blueprint for California Water")

a. Metrics – Within a ten-year period:

- Complete Upper San Joaquin River Basin Storage Investigation: e.g. Temperance Flat Project.
- Site, permit, construct and commission viable groundwater banking projects, e.g. Madera Irrigation District Groundwater Banking Project and the Eastern San Joaquin Integrated Conjunctive Use Program.
- Consider companion large-scale solar energy facility to power extraction pumps similar to Semi-tropic Water Storage District, Wasco, Kern County.
- Site, permit, construct and commission five recycled and three brackish water facilities. Consider companion large-scale solar energy facility to off-set conventional power requirements.

b. Objectives

• **Objective A: Complete Upper San Joaquin River Basin Project.**

The Upper San Joaquin River Basin Storage Investigation is a joint feasibility study by the U.S. Department of the Interior and the California Department of Water Resources. The Upper San Joaquin River Basin Investigation is one of only five major surface storage investigations proceeding forward in California.

Primary objectives include developing and managing San Joaquin River water supplies to contribute to restoration of the San Joaquin River, improve water quality of the San Joaquin River, and facilitate additional conjunctive management and water exchanges that improve the quality of water deliveries to urban and rural communities. Secondary objectives include increasing control of flood flows at Friant Dam, contributing to long-term Environmental Water Account water supply, developing hydropower generation opportunities, and developing recreation opportunities.

The multi-year development process has several key stages before proceeding to construction: a) Initial Alternatives Information Report, currently out for public review and comment; b) Plan Formulation Report, due out in mid-2007, Draft Feasibility Report/EIS/EIR, due out mid-2008; and; c) Final Feasibility Report/EIS/EIR, due out mid-2009. A Record of Decision and Final Report will then be prepared followed by funding, construction and commissioning. Project operation is forecast sometime in the post-2015 period.

(Source – U.S. Bureau of Reclamation/California Department of Water Resources: “Initial Alternatives Information Report” June 2005)

- **Objective B: Actively promote and support six (6) San Joaquin Valley conjunctive use projects that can be commissioned or enhanced in the 2007-2017 period (MID project as an example, other regional projects may apply as well).**

Conjunctive use of surface and groundwater supplies has been practiced in California for decades and is a thoroughly proven technique for increasing water supplies in a cost-effective and environmentally sound manner. Conjunctive use programs take advantage of available groundwater storage capacity to “bank” or store surface water through natural and/or artificial recharge for later extraction and use.

An example of a creative groundwater banking project under consideration is the Madera Irrigation District Water Supply Enhancement Project in western Madera County. This innovative project will take flood flows from the San Joaquin and Fresno Rivers and recharge up to 250,000 acre-feet of recharge capacity using existing conveyance structures and sloughs. The project will improve flood control, maintain and improve groundwater quality and reduce groundwater overdraft in the area. The 13,646 acre project will preserve the last remaining tract of Native Upland Habitat in the San Joaquin Valley.

In San Joaquin County, the 11-member agencies of the Groundwater Banking Authority are working to develop a strong foundation to guide and support responsible water management. The central component of this foundation is the Eastern San Joaquin Integrated Conjunctive Use Program (ICU Program). The ICU Program will construct and implement a comprehensive suite of water supply and conjunctive use projects and actions to ensure the future sustainability of water resources in San Joaquin County. Examples of some of the key projects are

the City of Stockton's Delta Water Supply Project, the County's American River - Freeport Element & MORE WATER Project, Stockton East Water District's Farmington Groundwater Recharge Program and other local infrastructure and conveyance improvements.

In Southern California, including Kern County, conjunctive management has increased average-year water deliveries by more than 2 million acre-feet (American Groundwater Association, 2000). Over a period of years, artificial recharge in these areas has increased the water supply in groundwater storage by about 7 million acre-feet.

Many areas of the San Joaquin Valley have tremendous potential to enhance local supplies even further by utilizing storm flows and recycled water where appropriate to recharge groundwater basins.

The California Water Plan, Update 2005, Volume 2, indicates at least nine major San Joaquin Valley recharge sites that are candidates for enhancement. Other viable projects may be in the development process as well. The Partnership recommends support for the expansion of existing conjunctive use projects as well as the development of new sites that have great promise. (Source – ACWA "Blueprint for California Water", California Water Plan 2005)

- **Objective C: Develop recycled and inland brackish water projects to expand regional water supplies.**

Locally developed water management options such as water recycling are a critical part of developing a diverse and reliable water supply for the state. Local water agencies have been on the leading edge of water recycling for decades, and today they recycle well over 500,000 acre-feet. This has the effect of reducing demand for freshwater supplies and cutting down on wastewater discharges into sensitive ecosystems. Substantial funding has been provided from federal sources as well as approved bond measures such as Proposition 204 in 1996, Proposition 13 in 2000 and Proposition 50 in 2002. This enabled many large recycling projects to come on-line in recent years and more are planned in the future. Grants and loans combined with local resources have made local recycling efforts cost-effective.

Once dismissed as too costly, desalination has re-emerged as a viable element in California's water supply strategy. Based on technology improvements that have reduced energy and cost requirements, desalination of both seawater and brackish water is expected to play a greater role in the water supply equation. DWR received 40 applications in early 2005 under Proposition 50 of 2002. About \$25 million in grants will be awarded in the current funding round.

The major benefits of inland brackish water recycling projects are: a) Process energy costs are approximately 50% of seawater recycling costs (groundwater recycling costs \$250-\$500/acre-foot versus \$800-\$2000/acre-foot for seawater);

and b) Relative close proximity to smaller communities with ongoing potable water requirements or larger cities able to budget for distribution costs.

Discharge of plant concentrate or brine stream from inland recycling plants will require disposal, possibly by deep-well injection.

Inland brackish water recycling plants may also provide an opportunity for companion large-scale solar applications to reduce peak grid energy requirements and reduce a plant's environmental footprint size. These solar applications may also include solar ponds for energy generation.

4. Goal 4: Improve water quality and expand salinity management infrastructure development.

Water quality is an important issue in the San Joaquin Valley. Ground water quality as it relates to beneficial uses is of high concern for drinking water, wildlife, and agricultural purposes. Naturally occurring contaminants in groundwater such as arsenic, selenium and uranium are joined by man-made contaminants such as nitrate, pesticides and other organic compounds. As stated later in more detail, increasing salinity levels are a general issue Valley-wide with some areas (such as a portion of Westlands Water District) experiencing acute problems.

Over 100 San Joaquin Valley drinking water systems currently violate at least one primary drinking water quality standard. An additional 276 community wells serving 129 water systems in Valley counties will be out of compliance with the new arsenic maximum contaminant level established for the year 2007.

Approximately 114,000 private domestic water wells exist in the Valley counties, some in areas of known groundwater contamination. Though residents who receive water from a community water system are notified of contamination of their water supply, owners of private domestic water wells are not usually aware of any contaminants that their family may be drinking.

The Central Valley is one of the most rapidly growing regions in the nation. Population is anticipated to increase 39% by 2020. Industry and urbanization are taking place at an increasing pace, although agriculture is still a dominant force, accounting for 57% of the \$6.5 billion in sales for California in 2002. The very features that make the Central Valley desirable for wildlife, farmers, developers, industry and the general population also contribute to salinity problems.

Salinity impacts are being felt in the San Joaquin Valley and the impacts are increasing.

- A preliminary analysis of salt flux in the Delta estimated that 700,000 tons of salt flow into the Delta from the San Francisco Bay annually and are imported into state, federal and other water projects.
- The Tulare Lake and San Joaquin River Basins collectively receive over two million tons of salt annually through water supplies distributed by state and federal projects.

- The Tulare Lake Basin has no outlet to the ocean under normal conditions for the discharge of salts. The majority of the water imported into the basin from state and federal water projects (over 1 million tons per year) is collecting in the basin and migrating to the basin's groundwater.
- A preliminary evaluation of salt migration to groundwater in the San Joaquin Valley estimated that over 400,000 tons of salt per year were being added to the confined aquifer in the San Joaquin Basin.

The Central Valley Regional Water Quality Control Board has been aware of the growing problem of increasing salinity in the San Joaquin Valley. Many key decisions must be made in order to control salinity and require a comprehensive regional approach with all stakeholders proactively engaged if long-term success is to be achieved. (Source – Central Valley Regional Water Quality Control Board “Salinity in the Central Valley” May 2006)

a. Metrics – Within a ten-year period:

- Establish a Central Valley Salinity Commission or similar entity to develop a comprehensive salinity management plan and to carry out the prerequisite updating of the San Joaquin and Tulare Lake Basin Plans and to oversee the implementation of the salinity management plan.
- Support the scientific and engineering studies necessary for the updating of the basin plans and the development of the comprehensive salinity management plan.
- Encourage state agencies (DWR, SWRCB, DHS, CVRWQCB, SJVAPCD and others) to work closely with local jurisdictions and agencies to site, finance, permit and commission new wastewater treatment facilities (including regional plants where feasible that comply with updated basin plan objectives) or to carry out other mitigation measures necessary for the protection of water quality.
- Encourage state and federal agencies to provide technical, permitting and financial assistance to smaller and particularly economically disadvantaged communities, to ensure compliance with drinking water standards and wastewater treatment requirements.
- Catalogue all domestic water wells in the Valley into areas of low, moderate and severe potential for contamination and enact a plan to notify well owners of their well's level or susceptibility to contamination.
- Develop a collaborative program in conjunction with the agricultural and urban communities under the auspices of a central Valley Salinity Commission or similar entity to protect local aquifers and surface water sources from contaminants including salts and nitrates. .

b. Objectives

- **Objective A: Develop a Salinity Management Plan to be implemented as an update to the San Joaquin and Tulare Lake Basin Plans.**

Establish a Central Valley Salinity Commission to proactively work with local governments and agencies and to forestall further surface and groundwater quality deterioration from salinity buildup in urban and rural areas. (Santa Ana Watershed Project Authority (SAWPA) may provide a very useful model). The development

of a Salinity Management Plan requires revisions to the San Joaquin and Tulare Lake Basin Plans.

The Porter-Cologne Water Quality Act requires each Regional Water Quality Control Board to formulate and adopt water quality control or basin plans for all areas within the region. The Porter-Cologne Act requires each Regional Board to establish water quality objectives to ensure reasonable protection of beneficial uses. It also requires a program for implementing water quality objectives within the basin plans. Basin plans are typically updated every three years. Due to funding constraints, the most recent triennial review for both the San Joaquin River and Tulare Lake Basins was 1998. Limited resources typically limit the scope of most plans. Consequently, the current basin plans remain heavily dependent on best available science from the early 1970s. Major water quality objectives will be met through capital infrastructure investments in the San Joaquin Valley based on updated Basin Plan guidelines. Both Basin Plans must be updated to provide the necessary framework for investment and management of salinity to support population growth and sustainable economic development.

- **Objective B: Ensure all communities in the San Joaquin Valley have adequate, sanitary sewage disposal facilities; proactively site, permit, finance and commission five regional wastewater treatment plants.**

Local jurisdictions need assistance in complying with existing and future water quality objectives. Smaller communities in particular need technical assistance and funding to conduct the planning required to bring projects to fruition. Where economic and environmental analyses indicate that regional solutions are the best alternative, the establishment of regional wastewater treatment plants should be encouraged. This enables communities, industries and agencies to take advantage of economies of scale, combining of resources, and spreading of financial risk. Recycled water will be viewed as a valuable second-use resource throughout the San Joaquin Valley.

- **Objective C: Ensure all communities in the San Joaquin Valley provide water that meets state and federal drinking water standards.**

Water quality is important to all regions of the state. In particular, small communities in the San Joaquin Valley will continue to face water quality standards that affect public health, economic development and overall quality of life. Agencies should make every effort to ensure that all communities have the necessary resources for safe drinking water.

5. Goal 5: Promote riparian environmental restoration.

Many of the California and San Joaquin Valley ecosystems have been altered to a degree where restoration is neither appropriate nor feasible. Instead, the focus of restoration should be on providing essential elements of the original ecosystem structure and function in a sustainable manner. Ecosystem restoration and protection should be viewed as the proper maintenance of a valuable resource.

Over the past several decades, the public has recognized the need to restore California's ecosystems. Local and regional restoration projects along with watershed alliances and ecosystem projects have multiplied throughout the state. Innovative projects like the San Joaquin River Parkway, the Lower Tuolumne River Parkway and the Merced River are examples of regional initiatives to restore riparian habitats and provide manifold benefits to both the public and nature.

Additional regional benefits that accrue to ecosystem restoration include supporting California lifestyle trends and travel tourism as a major growth industry in the San Joaquin Valley, and suggest that restoration actions will have a high return on investment. Similarly, managed wetlands and wildlife refuges provide bird watching and hunting opportunities that contribute hundreds of millions of dollars to California's economy.

a. Metrics – Within a ten-year period:

- Encourage state agencies (Resources Agency, DWR, CVRWQCB, DFG, Department of Conservation, and others) to work proactively with local jurisdictions, watershed groups, resource conservation districts and others to fully support and fund ecosystem restoration throughout the San Joaquin Valley.
- Develop a working partnership to fully scope, fund and implement the terms of the San Joaquin River Restoration adjudicated settlement (NRDC/Friant Water Users).

b. Objectives

- **Objective A: San Joaquin Valley Ecosystem Restoration Plan.**

Support state, local and regional agencies, watershed groups, nonprofit organizations and others to promote habitat and ecosystem restoration adjacent to riparian corridors in a sustainable manner to ensure long-term success. Particularly encourage projects that have educational components focused on K-12 students and youth and meld well with existing and proposed ecotourism efforts.

- **Objective B: San Joaquin Valley River Restoration and Water Management (NRDC/Friant Water Users Settlement)**

A historic agreement has been reached that will lead to restoration of water flows in the San Joaquin River below Friant Dam for salmon while undertaking the West's largest river restoration. This effort will be executed by the Natural Resources Defense Council, Friant Water Users Authority and the U.S. Bureau of Reclamation. The settlement will be based on two equal objectives: river restoration and water management. The settling parties have pledged to seek to restore and maintain healthy salmon populations in the San Joaquin River, while at the same time providing water supply assurances to all of the Friant Division long-term water contractors.

- **Objective B.1: Restoration: San Joaquin River restoration.**

One of the settlement's goals is to restore spring-run Chinook salmon and other fish populations in the 153-mile stretch of the San Joaquin

River between Friant Dam and the Merced River. Accomplishing this goal will require funding for extensive channel and structural improvements, and releases of additional water from Friant Dam.

- **Objective B.2: Water Management: San Joaquin River restoration.**

The settlement's restoration flows will rely on water that is currently being used to support 15,000 small farms on one million acres of the most productive farmland in the country, as well as some towns and cities along the southern San Joaquin Valley's east side, including the City of Fresno. The settlement recognizes the importance of water to these water users and calls for the development of additional long-term water supply solutions. This program would rely on a flexible combination of recirculation, recapture, reuse, exchange and/or transfer programs. Additional storage options would also be explored. .

6. Goal 6: Expand agricultural and urban water use efficiency and energy efficiency programs.

Agricultural Water Use

Agriculture is an important element of California's economy, generating \$27.6 billion in gross farm-gate income in 2001. California irrigated an estimated 9.6 million acres of cropland with about 34.2 million acre-feet of applied water. Growers and water suppliers implement state-of-the-art design, delivery and management practices to increase production and provide efficient use of water. As a result, growers continue to make great strides in increasing the economic value and output of their crops on a water per yield basis. This success is highlighted by an increase of water use efficiency in 32 important food crops by 38% from 1980 to 2000.

The California Water Plan suggests that conversion to more efficient on-farm irrigation systems will continue and even accelerate in future years as growers shift from row to permanent crops. However, with water efficiency comes a cost of energy. There will likely be a significant increase in electrical power requirements to operate high efficiency irrigation systems on the order of 10% additional agricultural energy, or about 250 to 300 megawatts, required. The additional agricultural electrical power will compete with demand from urban areas of increased population demanding commercial and industrial development. Well designed and executed agricultural water use and energy efficiency programs are essential if both of these valuable resources are to receive appropriate levels of stewardship in the future. Agriculture represents about 8% of the overall connected load and 5% of the peak summertime load of 50,000 megawatts of electrical power. Overall, pumping, pressurizing, transporting and treating water requires approximately 20% of California's entire annual electrical usage. (Sources – California Water Plan 2005, California Energy Commission "California Agricultural Water Electrical Energy Requirements", December 2003; CEC, 2005 Integrated Energy Policy Report, September 2005)

Urban Water Use

In 2000, cities and suburbs used about 8.7 million acre-feet of water. Approximately 15% of the electrical power and 32% of the natural gas consumed in the state is used for the pumping, transport and treating of water in urban areas.

Californians have made great progress on urban water use efficiency over the past few decades and, as has been demonstrated in various regions of the state, an increase in population does not necessarily result in a proportionate increase in urban water use. Credit for these improvements can be given in part to the implementation of water use efficiency practices that have been institutionalized.

The major benefit of improving water use efficiency is the lowering of demand and the ability to cost-effectively extend existing water supplies. Once viewed primarily as a temporary source of water supply in response to drought or emergency water situations, water use efficiency and conservation approaches have become a viable long-term supply option, saving considerable capital and operating costs for utilities and customers, avoiding environmental degradation and creating multiple benefits. Future population increases and commercial and industrial development in the San Joaquin Valley will occur primarily in suburban areas. It is therefore critically important that well designed and executed urban water use and energy efficiency programs be implemented in all major population centers in the San Joaquin Valley with pilot programs in smaller rural areas.

a. Metrics – Within a ten-year period:

- Design, fund and implement synergized water use and energy efficiency diagnostic, repair and education programs in all PG&E and SCE serviced agricultural areas of the San Joaquin Valley by January 1, 2008. Partner with California Public Utility Commission (CPUC), utilities, agencies and local jurisdictions to develop and implement cost effective programs.
- Design, fund and implement synergized urban water use and energy efficiency diagnostic, repair and education programs in all major PG&E and SCE serviced urban areas of the San Joaquin valley by January 1, 2008. Partner with CPUC, utilities, agencies and local jurisdictions to develop and implement cost-effective programs.

b. Objectives

- **Objective A: Cost-effective, results-oriented, agricultural water use and energy efficiency diagnostic, repair, retrofit and education programs.**
Well designed, funded and executed water use and energy efficiency programs will effectively steward these two valuable resources which underpin the economic evolution and quality of life in the San Joaquin Valley.
- **Objective B: Cost-effective, results-oriented, urban water use and energy efficiency diagnostic, repair, retrofit and education programs.**
Well designed, funded and executed urban water use and energy efficiency programs will steward these two valuable resources which underpin the future success of the San Joaquin Valley.

B. At-A-Glance Matrix

IV. Resources for Implementation

A. Existing Resources

A number of resources exist for addressing either water conservation/efficiency or energy conservation/efficiency but not both in the same framework. Energy resources for conservation/efficiency are typically derived from the ratepayer funded Public Goods Charge. As of 2006 all Public Goods monies for energy efficiency and conservation are the direct responsibility of PG&E and SCE under the direction of the California Public Utilities Commission. The CPUC has budgeted almost \$2 billion for energy efficiency throughout California during the period 2006-2008. A good portion of the energy efficiency monies are spent in the San Joaquin Valley; however, the Valley is a net contributor to the statewide Public Goods Funds pool. A re-ordering of priorities may be necessary to accomplish the Partnership's goals and objectives.

Water conservation/efficiency funds are typically sourced through California bond issues and delivered via programs operated by DWR or the SWRCB. Typically the water/energy connection is not a priority item in the selection of projects. Other items like water quality, quantity, and environmental restoration have higher priorities. All current water bond monies are currently obligated. Two water bonds (Proposition 84 and Proposition IE) are scheduled for voter review in November 2006. Water/energy priorities in the bond language are unknown at this point. It also appears that for whatever reason, there are notable inequities in project selection for projects proposed from the San Joaquin Valley. Additional bond monies, federal funds or private sector funds will need to be committed to complete goals indicated in the Strategic Action Proposal.

B. Additional Resources

Recommendation	Year 1 2007	Years 2-4 2008-10	Years 5-7 2011-13	Years 8- 10 2014-16	Total (may not total due to rounding)
1. Development of San Joaquin Valley Regional Water Plans	\$15 mil	\$26 mil	\$26 mil	\$7.5 mil	\$73,339,066
2. Major levee enhancements in Sacramento-San Joaquin Delta and San Joaquin Valley					
<i>A Improve San Joaquin Valley and tributaries' levees</i>	\$8.6 mil	\$20 mil	\$20 mil	\$14 mil	\$57,000,000
<i>B Improve Delta Levee Integrity</i>	\$12.3 mil	\$28.7 mil	\$28.7 mil	\$20.5 mil	\$82,000,000

3. Augment surface, groundwater banking, & recycled water supplies in Valley <i>A Complete Upper San Joaquin R. Basin Project</i> <i>B Promote (5) Conjunctive Use Projects like MID to be Commissioned by 2017</i> <i>C Develop Recycled and Inland Brackish Water Projects to Expand Fresh Water Supplies</i>	 \$100 mil \$221.9 mil \$8.6 mil	 \$200 mil \$443.9 mil \$17.3 mil	 \$600 mil \$443.9 mil \$17.3 mil	 \$100 mil \$369.9 mil \$14.4 mil	 \$1,000,000,000 \$1,480,000,000 \$57,750,000
4. Water Quality and Salinity Management Infrastructure Development <i>A Develop San Joaquin Valley salinity management plan and update San Joaquin & Tulare Lake Basin Plans</i> <i>B Ensure all communities have sewage disposal facilities & site, permit, finance & commission (5) regional wastewater treatment plants</i> <i>C Ensure all communities provide water that meets state & federal drinking water</i>	 \$14.3 mil \$50.54 mil \$8.5 mil	 \$32.1 mil \$101.1 mil \$16.9 mil	 \$32.1 mil \$101.1 mil \$16.9 mil	 \$32.1 mil \$84.2 mil \$14.1 mil	 \$106,935,000 \$336,949,800 \$56,427,603

<i>standards</i>					
5. Environmental Restoration					
<i>A Develop San Joaquin Valley Restoration Plan</i>	\$12.5 mil	\$18.9 mil	\$18.9 mil	\$18.9 mil	\$66,000,000
<i>B San Joaquin Valley River Restoration (Friant WUA-NRDC Settlement)</i>	\$220 mil	\$260 mil	\$260 mil	\$ 260 mil	\$1,000,000,000
6. Expanded Agricultural & Urban Water-Use & Energy Efficiency Programs					
<i>A Cost-effective, results-oriented, agricultural water-use & energy-efficiency diagnostic, repair & education programs</i>	\$3.6 mil	\$10.7 mil	\$10.5 mil	\$10.5 mil	\$35,200,000
<i>B Cost-effective, results-oriented, urban water-use & energy-efficiency diagnostic, repair & education programs</i>	\$3.5 mil	\$10.5 mil	\$10.5 mil	\$10.5 mil	\$35,000,000
Yearly/Period Totals	\$679.32 million	\$1.186 Billion	\$1.56 Billion	\$1.715 Billion	\$4.392 Billion

V. Status Report

The California Department of Water Resources, California Regional Water Quality Control Board, Central Valley Regional Water Quality Control Board (collectively referred to as Water Boards), California Department of Conservation, California Department of Fish & Game, United States Bureau of Reclamation, United States Corps of Engineers, United State Fish & Wildlife Agency and local agencies to include cities, counties, water resources agencies and collaboratives, watershed groups and nonprofits have funded programs, staff and consultants directed towards many of the recommendations contained in the Water component of the California Partnership Strategic Action Plan.

- DWR through Proposition 50 and other monies has funded a number of on-going, comprehensive regional water management plans at a number of locations throughout the eight-county area. Productive dialogue between a variety of stakeholders and actionable long-term water plans should be the end product of this noteworthy effort. DWR Bulletin 160-05 provides an excellent in-depth technical resource for all of these efforts. Passage of Propositions 84 and IE will allocate in excess of \$117 million for advancing integrated regional water management plans in the San Joaquin Valley.
- Similarly, DWR has directed staff and resources towards improving and maintaining the Sacramento-San Joaquin Delta and San Joaquin Valley levees. Unfortunately, the effort has been sadly under-funded for years leaving the Delta and San Joaquin Valley levees in perilous condition. California voters, with visions of Hurricane Katrina victims and billions of property damage to the Gulf Coast have an opportunity to remedy the shortfall in November 2006. Proposition 84 specifies approximately \$275 million for Delta levee and Delta levee maintenance subventions. An additional \$275 million is specified for flood control facilities for the entire state. The San Joaquin Valley component is not defined. Proposition IE specifies \$3 billion for levee repair and maintenance as well as \$290 million for flood protection corridors and bypasses plus \$300 million for storm water flood management projects also throughout California.
- Development and augmentation of surface, groundwater banking and recycled water projects have long been a priority of DWR, USBR and local agencies. Water conservation and regional water planning while useful tools will not be sufficient to provide adequate water quality and quantity in coming years given projected San Joaquin Valley population and economic growth and the future impacts of global warming on Sierra snow pack. While some monies are set aside in the two November 2006 water bond propositions for water supply and storage augmentation, the funding level is not nearly adequate to meet the long-term need. Additional state, federal and local resources will be required.
- Improvement of water quality is a major priority area for both DWR and the Water Boards throughout the San Joaquin Valley and has been for many years. The Central Valley's large geographic area, ethnically diverse communities, many underserved compared to urban populations and numerous sources of potential contamination will require long-term funding and agency attention for the foreseeable future. A near-term bright spot is again Propositions 84. Proposition 84 has designated \$525 million for safe drinking water and water quality projects for the entire state. The San Joaquin Valley component is unspecified. Proposition IE has no water quality monies designated.
- Riparian habitat restoration is an area that has received a great deal of funding in past years and many noteworthy and award winning projects and effective collaborations have evolved. Some of the collaborations such as the Friant Water Users Association and the Natural Resources Defense Council regarding the San Joaquin River Settlement have been more contentious although that now appears to be settled. Implementing the
- Settlement will be quite expensive and will require state and federal financial resources to augment funds provided by local agencies. While there is some disagreement between the parties as to the ultimate cost of restoration with the range being between \$250 million (NRCD) and \$1 billion (FWUA). Fortunately, a portion of the outstanding work is a component of Proposition 84 which specifies \$100 million for the Settlement with another \$36 million being specified for the San Joaquin River Conservancy. One does

want to be mindful that while the San Joaquin River will receive substantial funding in the near term, extended riparian habitat restoration is required in other areas of the San Joaquin Valley such as the Merced, Kings, Kern, Cosumnes and other river systems.

- Water-use efficiency and energy efficiency diagnostic, retrofit/replace and education programs in agricultural and urban sectors are proven methods of reducing both water and energy consumption. Unfortunately there is seldom synergy between the resource stewardship efforts and rarely a program tie-in between the two. DWR funds water conservation from bond issues so consistency of funds is not achieved. Energy efficiency is well funded by the Public Goods Charge for customers served by utilities such as PG&E and SCE. Utilities in California will spend \$2 billion on energy efficiency programs in the 2006-08 period. While many utility customers pump, treat or otherwise move water via electricity or natural gas, water conservation is not a screen for utility energy conservation efforts. While there is a great deal of discussion at the California Public Utilities Commission on the water-energy connection, effective public policy to steward these two valuable resources synergistically does not appear to have made it to customers as yet. Water-energy program convergence could be a very, very productive area for California.